
Publications and Conference Presentations

Publications

- K. S. Anderson, R. Betti, P. W. McKenty, T. J. B. Collins, M. Hohenberger, W. Theobald, R. S. Craxton, J. A. Delettrez, M. Lafon, J. A. Marozas, R. Nora, S. Skupsky, and A. Shvydky, "A Polar-Drive Shock-Ignition Design for the National Ignition Facility," *Phys. Plasmas* **20**, 056312 (2013).
- M. Barcys, S.-W. Bahk, M. Spilatro, D. Coppenbarger, E. Hill, T. H. Hinterman, R. W. Kidder, J. Puth, T. Touris, and J. D. Zuegel, "Deployment of a Spatial Light Modulator-Based Beam-Shaping System on the OMEGA EP Laser," in *High Power Lasers for Fusion Research II*, edited by A. A. S. Awwal (SPIE, Bellingham, WA, 2013), Vol. 8602, Paper 86020F.
- C. Dorrer, "Analysis of the Chromaticity of Near-Field Binary Beam Shapers," *Appl. Opt.* **52**, 3368 (2013).
- C. Dorrer, "Analysis of Pulse Replicators for High-Bandwidth, High-Dynamic-Range, Single-Shot Optical Characterization," *J. Lightwave Technol.* **31**, 1374 (2013).
- L. Gao, P. M. Nilson, I. V. Igumenshev, G. Fiksel, R. Yan, J. R. Davies, D. Martinez, V. Smalyuk, M. G. Haines, E. G. Blackman, D. H. Froula, R. Betti, and D. D. Meyerhofer, "Observation of Self-Similarity in the Magnetic Fields Generated by the Ablative Nonlinear Rayleigh-Taylor Instability," *Phys. Rev. Lett.* **110**, 185003 (2013).
- V. N. Goncharov, "Cryogenic Deuterium and Deuterium-Tritium Direct-Drive Implosions on Omega," in *Laser-Plasma Interactions and Applications*, edited by P. McKenna, D. Neely, R. Bingham, and D. A. Jaroszynski, Scottish Graduate Series (Springer, Switzerland, 2013), Chap. 7, pp. 135–183.
- I. V. Igumenshev, D. H. Froula, D. H. Edgell, V. N. Goncharov, T. J. Kessler, F. J. Marshall, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, D. T. Michel, T. C. Sangster, W. Seka, and S. Skupsky, "Laser-Beam Zooming to Mitigate Crossed-Beam Energy Losses in Direct-Drive Implosions," *Phys. Rev. Lett.* **110**, 145001 (2013).
- J. H. Kelly, A. Shvydky, J. A. Marozas, M. J. Guardalben, B. E. Kruschwitz, L. J. Waxer, C. Dorrer, E. Hill, A. V. Okishev, and J.-M. Di Nicola, "Simulations of the Propagation of Multiple-FM Smoothing by Spectral Dispersion on OMEGA EP," in *High Power Lasers for Fusion Research II*, edited by A. A. S. Awwal (SPIE, Bellingham, WA, 2013), Vol. 8602, Paper 86020D.
- B. E. Kruschwitz, J. H. Kelly, C. Dorrer, A. V. Okishev, L. J. Waxer, G. Balonek, I. A. Begishev, W. Bittle, A. Consentino, R. Cuffney, E. Hill, J. A. Marozas, M. Moore, R. G. Roides, and J. D. Zuegel, "Commissioning of a Multiple-Frequency Modulation Smoothing by Spectral Dispersion Demonstration System on OMEGA EP," in *High Power Lasers for Fusion Research II*, edited by A. A. S. Awwal (SPIE, Bellingham, WA, 2013), Vol. 8602, Paper 86020E.
- J. Li, J. R. Davies, T. Ma, W. B. Mori, C. Ren, A. A. Solodov, W. Theobald, and J. Tonge, "Hot-Electron Generation from Laser-Pre-Plasma Interactions in Cone-Guided Fast Ignition," *Phys. Plasmas* **20**, 052706 (2013).
- D. T. Michel, A. V. Maximov, R. W. Short, J. A. Delettrez, D. Edgell, S. X. Hu, I. V. Igumenshev, J. F. Myatt, A. A. Solodov, C. Stoeckl, B. Yaakobi, and D. H. Froula, "Measured Hot-Electron Intensity Thresholds Quantified by a Two-Plasmon-Decay Resonant Common-Wave Gain in Various Experimental Configurations," *Phys. Plasmas* **20**, 055703 (2013).
- J. F. Myatt, H. X. Vu, D. F. DuBois, D. A. Russell, J. Zhang, R. W. Short, and A. V. Maximov, "Mitigation of Two-Plasmon Decay in Direct-Drive Inertial Confinement Fusion Through the Manipulation of Ion-Acoustic and Langmuir Wave Damping," *Phys. Plasmas* **20**, 052705 (2013).
- A. V. Okishev, I. A. Begishev, R. Cuffney, S. Papernov, and J. D. Zuegel, "A Highly Energetic, Multiwavelength, Diode-Pumped Nanosecond Laser System with Flexible Pulse-Shaping Capability," in *Solid State Lasers XXII: Technology and*

Devices, edited by W. A. Clarkson, and R. K. Shori (SPIE, Bellingham, WA, 2013), Vol. 8599, Paper 85990Q.

S. Papernov, “Mechanisms of Near-Ultraviolet, Nanosecond-Pulse-Laser Damage in $\text{HfO}_2/\text{SiO}_2$ -Based Multilayer Coatings,” *Chin. Opt. Lett.* **11**, S10703 (2013).

L. Parlato, R. Arpaia, C. De Lisio, F. Miletto Granozio, G. P. Pepe, P. Perna, V. Pagliarulo, C. Bonavolontà, M. Radovic, Y. Wang, R. Sobolewski, and U. Scotti di Uccio, “Time-Resolved Optical Response of All-Oxide $\text{YBa}_2\text{Cu}_3\text{O}_7/\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ Proximitized Bilayers,” *Phys. Rev. B* **87**, 134514 (2013).

J. Qiao, P. A. Jaanimagi, R. Boni, J. Bromage, and E. Hill, “Measuring 8–250 ps Short Pulses Using a High-Speed Streak Camera on Kilojoule, Petawatt-Class Laser System,” *Rev. Sci. Instrum.* **84**, 073104 (2013).

P. B. Radha, F. J. Marshall, J. A. Marozas, A. Shvydky, I. Gabalski, T. R. Boehly, T. J. B. Collins, R. S. Craxton,

D. H. Edgell, R. Epstein, J. A. Frenje, D. H. Froula, V. N. Goncharov, M. Hohenberger, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, R. D. Petrasso, T. C. Sangster, and S. Skupsky, “Polar-Drive Implosions on OMEGA and the National Ignition Facility,” *Phys. Plasmas* **20**, 056306 (2013).

T. C. Sangster, V. N. Goncharov, R. Betti, P. B. Radha, T. R. Boehly, D. T. Casey, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, D. H. Edgell, R. Epstein, C. J. Forrest, J. A. Frenje, D. H. Froula, M. Gatu-Johnson, V. Yu. Glebov, D. R. Harding, M. Hohenberger, S. X. Hu, I. V. Igumenshchev, R. T. Janezic, J. H. Kelly, T. J. Kessler, C. Kingsley, T. Z. Kosc, J. P. Knauer, S. J. Loucks, J. A. Marozas, F. J. Marshall, A. V. Maximov, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, D. T. Michel, J. F. Myatt, R. D. Petrasso, S. P. Regan, W. Seka, W. T. Shmayda, R. W. Short, A. Shvydky, S. Skupsky, J. M. Soures, C. Stoeckl, W. Theobald, V. Versteeg, B. Yaakobi, and J. D. Zuegel, “Improving Cryogenic Deuterium–Tritium Implosion Performance on OMEGA,” *Phys. Plasmas* **20**, 056317 (2013).

Forthcoming Publications

J. R. Davies, R. Betti, P. M. Nilson, and A. A. Solodov, “Copper K-Shell Emission Cross Sections for Laser-Solid Experiments,” to be published in *Physics of Plasmas*.

D. H. Froula, T. J. Kessler, I. V. Igumenshchev, R. Betti, V. N. Goncharov, H. Huang, S. X. Hu, E. Hill, J. H. Kelly, D. D. Meyerhofer, A. Shvydky, and J. D. Zuegel, “Mitigation of Cross-Beam Energy Transfer: Implications of Two-State Focal Zooming on OMEGA,” to be published in *Physics of Plasmas*.

I. V. Igumenshchev, V. N. Goncharov, W. T. Shmayda, D. R. Harding, T. C. Sangster, and D. D. Meyerhofer, “Effects of Local Defect Growth in Direct-Drive Cryogenic Implosions on OMEGA,” to be published in *Physics of Plasmas*.

Q. Wang, J. U. Wallace, T. Y.-H. Lee, L. Zeng, J. J. Ou, L. J. Rothberg, and S. H. Chen, “Time-of-Flight Measurement of Charge Carrier Mobility Through Vacuum-Sublimed Glassy Films of *s*-Triazine- and Carbazole-Based Bipolar Hybrid and Unipolar Compounds,” to be published in *Organics Electronics*.

J. Zhang, J. F. Myatt, R. W. Short, A. V. Maximov, H. X. Vu, D. F. DuBois, and D. A. Russell, “Multibeam Two-Plasmon Decay from Linear Threshold to Nonlinear Saturation,” to be published in *Physical Review Letters*.

Conference Presentations

D. D. Meyerhofer, “Observation of Self-Similarity in the Magnetic Fields Generated by the Nonlinear Rayleigh–Taylor Instability,” Reconnection Workshop, Princeton, NJ, 4 April 2013.

W. T. Shmayda, “Overview of Tritium Activities of the Laboratory for Laser Energetics,” Tritium Focus Group Workshop, Germantown, MD, 23–25 April 2013.

The following presentations were made at the Omega Laser Facility Users Group Workshop, Rochester, NY, 24–26 April 2013:

A. T. Agliata, “How to Ensure Successful Diagnostic Qualification at the OMEGA Laser Facility.”

E. F. Armstrong, M. Barczys, B. E. Kruschwitz, and S.-W. Bahk, “Wavefront Measurements of High-Power UV Lasers with a Hartmann Sensor.”

M. Barczys, S.-W. Bahk, M. Spilatro, D. Coppenbarger, E. Hill, T. H. Hinterman, R. W. Kidder, J. Puth, T. Touris, and J. D. Zuegel, “Deployment of a Spatial Light Modulator-Based Beam-Shaping System on the OMEGA EP Laser.”

C. M. Caggiano, “Fabrication and Characterization of Radial and Azimuthal Polarization Converters with Photoaligned Liquid Crystals.”

D. Canning, S. Householder, M. Labuzeta, J. Puth, S. F. B. Morse, B. E. Kruschwitz, M. Barczys, E. Hill, J. Kwiatowski, and R. W. Kidder, “OMEGA EP Shot Performance and Facility Enhancement Status.”

J. A. Fooks, M. J. Bonino, A. L. Greenwood, J. S. Jaquez, and M. L. Hoppe, Jr., “Assembly Techniques and Challenges of Two-Plasmon–Decay (TPD) Double-Shell Targets.”

V. N. Goncharov, “Recent Progress in Omega Cryogenic Implosions.”

D. Haberberger, R. Boni, M. Barczys, J. Brown, R. G. Roides, R. Huff, S. Ivancic, M. Bedzyk, R. S. Craxton, F. Ehrne, E. Hill, R. K. Jungquist, J. Magoon, D. Mastro Simone, J. Puth, W. Seka, M. J. Shoup III, W. Theobald, D. Weiner, C. Stoeckl, J. D. Zuegel, and D. H. Froula, “OMEGA EP 4ω Diagnostic System Description and Recent Results.”

E. Hill and J. Puth, “Omega Laser Facility Timing Management.”

R. W. Kidder, M. Miller, C. Kingsley, and A. Zeller, “LLE Resources Are Established to Provide Access to Information for External Users.”

R. L. McCrory, “Welcoming Remarks: Omega Laser Users’ Group 5th Annual Meeting.”

S. F. B. Morse, “Omega Laser Facility Update: 2013 Progress on OLUG Recommendations.”

P. M. Nilson, R. Jungquist, C. Stoeckl, C. Mileham, P. A. Jaanimagi, I. A. Begishev, W. Theobald, J. R. Davies, J. F. Myatt, A. A. Solodov, J. D. Zuegel, D. H. Froula, R. Betti, D. D. Meyerhofer, K. Hill, M. Bitter, P. Efthmion, and B. Stratton, “High-Resolving-Power, Ultrafast Streaked X-Ray Spectrometer for OMEGA EP.”

G. Pien, “Diagnostic Performance on OMEGA.”

P. B. Radha, F. J. Marshall, M. Hohenberger, T. R. Boehly, T. J. B. Collins, R. S. Craxton, D. H. Edgell, D. H. Froula, V. N. Goncharov, J. A. Marozas, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, D. T. Michel, T. C. Sangster, S. Skupsky, J. A. Frenje, and R. D. Petrasso, “Recent Results from Polar-Drive–Implosions on OMEGA and the NIF.”

R. Q. Rivlis, R. Boni, and S. Ivancic, “Optical Modeling and Analysis of a High-Throughput and High-Temporal-Resolution Spectrometer.”

C. Sorce and M. Labuzeta, “Exploring the Capabilities of the Omega Laser Facility Web Pages.”

S. Stagnitto, M. Labuzeta, and C. Sorce, “Qualifying as an External Instrument Specialist/Technician at LLE.”

The following presentations were made at the 9th International Laser Operations Workshop, Livermore, CA, 13–16 May 2013:

D. Canning, G. Balonek, A. Consentino, C. Dorrer, E. Hill, S. Householder, B. E. Kruschwitz, S. F. B. Morse, J. Puth, and J. D. Zuegel, “Multi-FM and NIF PAM Operation on OMEGA EP.”

S. F. B. Morse, R. E. Bahr, S. J. Loucks, J. Ulreich, B. Rice, M. J. Shoup III, D. W. Jacobs–Perkins, C. Stoeckl, and C. Mileham, “Cryogenic DT System Improvements for Enhanced ICF Platforms.”

J. Puth, S. F. B. Morse, D. Canning, S. Stagnitto, S. Householder, M. Labuzeta, M. Barczys, E. Hill, M. Spilatro, D. Haberberger, J. Kwiatkowski, R. W. Kidder, B. E. Kruschwitz, G. Pien, and G. Fiksel, “Omega Laser Facility Status and Performance.”

T. C. Sangster, “Migrating Polar Drive from OMEGA to the NIF”

C. Sorce, R. E. Bahr, J. Katz, D. Mastro Simone, M. McCluskey, C. Mileham, A. Sorce, N. Whiting, and D. H. Froula, "The Experimental Support Group's Role at the OMEGA Facility."

L. J. Waxer, J. H. Kelly, B. E. Kruschwitz, C. Dorrer, M. J. Guardalben, A. V. Okishev, and J. D. Zuegel, "Considerations for Successful Operation of the OMEGA EP Multi-FM SSD System."

P. M. Nilson, "High-Resolving Power, Ultrafast Streaked X-Ray Spectrometer for OMEGA EP," NIF Diagnostic Workshop, Livermore, CA, 21 May 2013.

The following presentations were made at Photonics North, Ottawa, Canada, 3–5 June 2013:

C. Chakraborty, J. Serafini, J. Zhang, R. Sobolewski, L. Q. Zhang, Y. Alimi, A. M. Song, I. Iñiguez-de-la-Torre, J. Mateos, and T. González, "Self-Switching Diodes as Optical Photodectors."

J. Serafini, Y. Wang, and R. Sobolewski, "Time Resolved Carrier Dynamics in Si-on-Glass Absorbers for Photovoltaic Cells."

J. Serafini, J. Zhang, Y. Akbas, R. Sobolewski, M. Mikulics, and R. Adam, "Time-Resolved Relaxation Dynamics of Non-equilibrium Carriers in Free-Standing GaAs Films."

The following presentations were made at CLEO 2013, San Jose, CA, 9–14 June 2013:

K. S. Anderson, R. Betti, P. W. McKenty, T. J. B. Collins, M. Hohenberger, W. Theobald, T. R. Boehly, R. S. Craxton, J. A. Delettrez, D. H. Edgell, S. X. Hu, M. Lafon, J. A. Marozas, D. D. Meyerhofer, R. Nora, T. C. Sangster, W. Seka, S. Skupsky, C. Stoeckl, A. Shvydky, B. Yaakobi, X. Ribeyre,

G. Schurtz, A. Casner, L. J. Perkins, M. R. Terry, and D. E. Fratanduono, "Shock-Ignition OMEGA Experiments and Target Design for the NIF."

S.-W. Bahk, J. Bromage, J. D. Zuegel, and R. K. Jungquist, "An Off-Axis, Single-Pass Radial-Group-Delay Compensator Design Using an Offner Triplet for a Broadband OPCPA Laser."

C. Dorrer, "Characterization of Highly Dispersive Components Using Direct Instantaneous Frequency Measurements."

D. Haberberger, S. Ivancic, M. Barczys, R. Boni, and D. H. Froula, "Plasma Refractometry Using Angular Spectral Filters on OMEGA EP."

T. Z. Kosc, A. Owens, A. L. Rigatti, S. D. Jacobs, and J. H. Kelly, "Long-Term Performance of Liquid Crystal Optics on Large Fusion Lasers."

J. Qiao, J. Papa, and A. Kalb, "Design and Analysis of Meter-Size Deformable Gratings for Compressing Kilojoule, Petawatt Laser Pulses."

T. C. Sangster, "Polar-Direct-Drive Ignition on the NIF."

The following presentations were made at the 25th Symposium on Fusion Engineering, San Francisco, CA, 10–14 June 2013:

D. R. Harding, T. B. Jones, W. Weiqiang, and Z. Bei, "Status and Challenges for Mass Producing Inertial Fusion Energy Targets Using an Automated Electromechanical Microfluidic Process."

S.-J. Scott and D. R. Harding, "Accelerated Evaporative Drying of RF Foam for ICF Target Fabrication."

W. T. Shmayda, "Evaluation of Tritium Capture Systems."

T. C. Sangster, “Polar-Drive ICF,” NIF Management Advisory Committee, Livermore, CA, 11–12 June 2013.

J. B. Oliver, J. Bromage, C. Smith, D. Sadowski, C. Dorrer, and A. L. Rigatti, “Plasma-Ion-Assisted Coatings for 15-fs Laser Systems,” Optical Interference Coatings 2013, Whistler, Canada, 16–21 June 2013.

S. D. Jacobs, T. Jacobs, D. Saulnier, M. M. Mayton, T. DePorter, J. Sydor, and Z. Hobbs, “Reclamation of Rare-Earth Oxides from Spent Optical Polishing Slurries: Expanding the Technology,” Rochester Regional Optics/Photonics/Imaging Business Connections Symposium, Rochester, NY, 20 June 2013.

S.-W. Bahk and C. Dorrer, “Wavefront Sensing Improvements Using a Checkerboard Amplitude Mask,” Computational Optical Sensing and Imaging, Arlington, VA, 23–27 June 2013.

R. Nora, W. Theobald, K. S. Anderson, M. Hohenberger, M. Lafon, J. A. Delettrez, A. A. Solodov, P. W. McKenty, W. Seka, T. R. Boehly, S. X. Hu, C. Stoeckl, B. Yaakobi, R. Yan, X. Ribeyre, G. Schurtz, A. Casner, and R. Betti, “Shock Ignition: Past, Present, and Future,” 4th International Conference on High Energy Density Physics, Saint-Malo, France, 25–28 June 2013.

J. M. Soures, “The Omega Laser Facility Provides Unique High-Energy-Density Science Capabilities to University, National Laboratory, and Industry Researchers,” 2013 User Science Exhibition, Washington, DC, 26 June 2013.